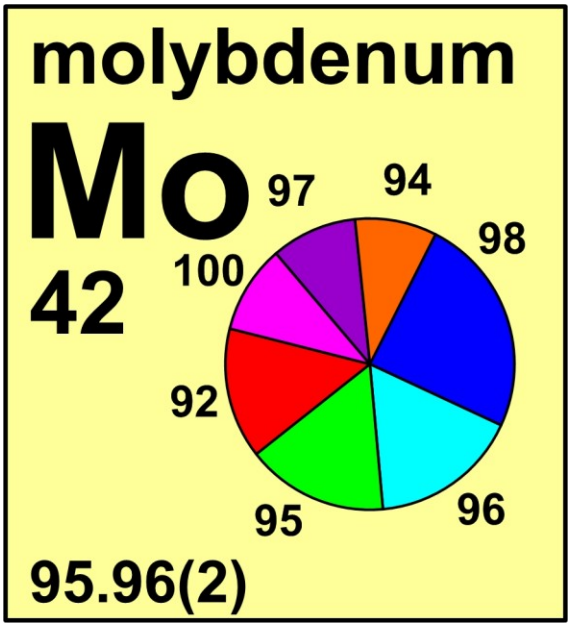
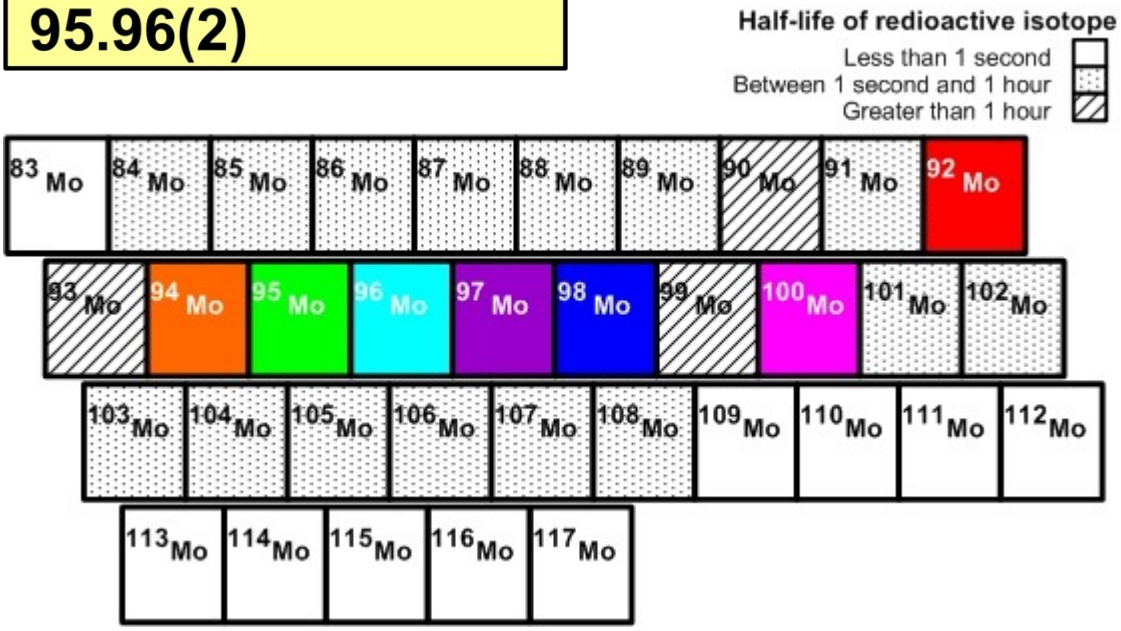
molybdenum



Stable isotope	Atomic mass*	Mole fraction
^{92}Mo	91.906 811	0.1477
^{94}Mo	93.905 0883	0.092 26
^{95}Mo	94.905 8421	0.159 00
^{96}Mo	95.904 6795	0.166 74
^{97}Mo	96.906 0215	0.095 60
^{98}Mo	97.905 4082	0.2420
^{100}Mo	99.907 477	0.0967

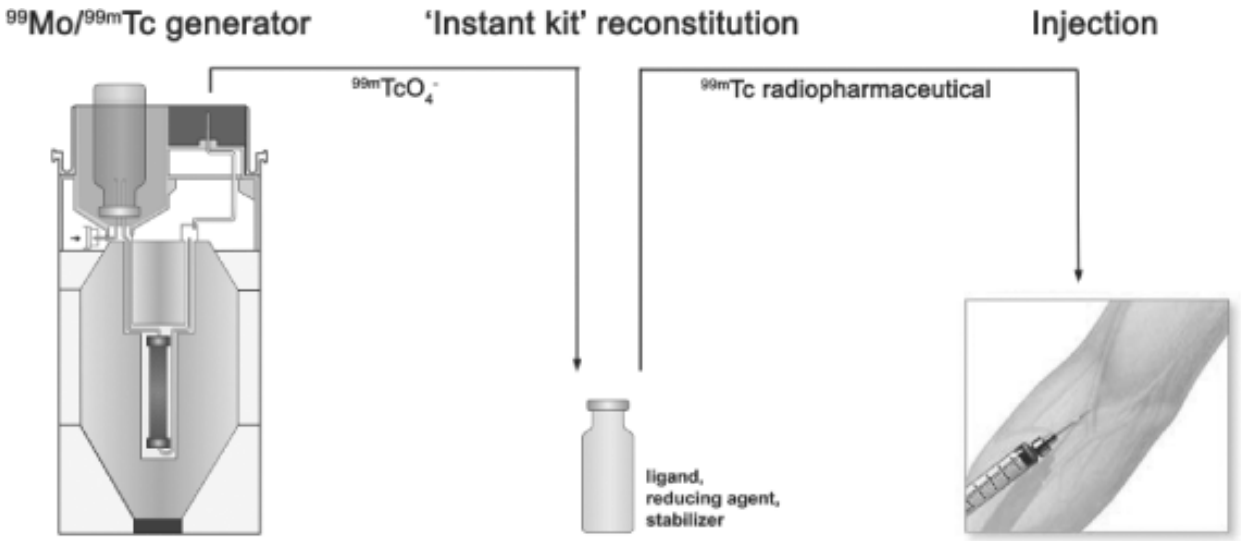
* Atomic mass given in unified atomic mass units, u.



Important applications of stable and/or radioactive isotopes

Isotopes in industrial radionuclide production

1) The isotope ^{99}Mo is commercially produced by the fission of ^{235}U and is the parent nuclide to ^{99m}Tc, which is the most widely used radiopharmaceutical in the world. The much longer half-life of ^{99}Mo (about 2.7d) allows the radionuclide to be transported more easily than the short-lived ^{99m}Tc. The ^{99}Mo/^{99m}Tc generator was originally developed at Brookhaven National Laboratory in the early 1960's and is now a patented system.
2) Depleted ^{95}Mo is being studied for use in high flux reactors UMo fuel elements.



Scheme 3.

Figure 1: $^{99}Mo/^{99m}Tc$ generator produces ^{99}Tc for elution of gamma-emitting ^{99m}Tc to prepare radiopharmaceuticals, which are used for many practical purposes in the medical field.

Isotopes in medicine

1) ^{95}Mo can be used to produce medical radioisotope ^{97}Ru.